

SSS'18

2018 international conference on Sensors, Systems, Signals
and advanced technologies (SSS'18)

Hammamet-Tunisia, May 10-12, 2018

Program



LARATSI-ENIM



الشركة التونسية للكهرباء والغاز للطاقت المتجددة
STEG Energies Renouvelables

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Welcome Message

On behalf of the organizing committee, we would like to extend a warm welcome to all the participants of the international conference on Sensors, Systems, Signals and advanced technologies, (SSS'18) being held at the Vincci Maillia Hotel, Hammamet-Tunisia, May 10-12, 2018.

We consider ourselves fortunate to have the opportunity to organize SSS'18 in Tunisia and offer you a taste of the Tunisian hospitality.

In addition to the regular papers, SSS'18 includes exciting plenary keynotes. We have received around 150 papers writing by 382 authors from 25 countries worldwide that yielded 85 valid papers. The acceptance rate for this conference was around 60%. Authors from all continents honored us by reporting their original work, in all areas of Electronic devices, Low-voltage, low-power VLSI design, Image Processing, Signal Processing, Smart Cities, Computer sciences. We thank them for submitting their work to our conference.

We would like to thank all the members on the organizing committee for their extraordinary efforts to ensure that this conference will be a successful one.

We would like to express our gratitude to our sponsors, ATTeDD, the University of Sousse, Gazi university and the University of Monastir, as well as to our technical sponsors, IEEE RAS Tunisia chapter, and our partner LARATSI-ENIM, CRMN, LR-SITI and LATiS.

On behalf of the organizing committee of SSS'18

Prof. Med Tarek KHADIR, University Badji Mokhtar Annaba, Algeria

Prof. Kamel Besbes, CRMN, Tunisia

Prof. Najoua Ben Amara, University of Sousse, Tunisia

Prof. Zied Lachiri, University of Tunis, Tunisia

Dr. Chakib BEN NJIMA, University of Sousse, Tunisia

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El Moukhtar Zemmouri , Morocco	Noureddine Zerhouni , France

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Natheer Gharaibeh , Jordan	Youssef Zaz , Morocco
Nasr Eddine Debbache , Algeria	Zahi Jarir , Morocco
Nabil Laachfoubi , Morocco	Zouhair Guenoun , Morocco
Nizar Rokbani , Tunisia	Zaki Sari , Algeria
Nicolas Langlois , France	Zineb Simeu-Abazi , France

Accommodation and Venue

SSS'18 will be held at **Vincci Marillia Hotel** in Hammamet-Tunisia.

Website: <https://www.vinccihoteles.com/fre/Hotels/Tunisie/Hammamet/Vincci-Marillia>



The hotel Vincci Marillia 4 * offers you all the comfort of a luxurious hotel, near one of the most prized tourist resorts of Tunisia.

The hotel Vincci Marillia 4 *, a 4-star hotel of international class, with its suites and spacious rooms, its terraced (hanging) swimming-pool and its view onto the sea, will make your stay in Hammamet even more pleasant.

The hotel Vincci Marillia 4 * is located in Yasmine Hammamet , a place characterized by the jasmine plantations that give its name to the locality. It is in a privileged place imbued with Arab culture that is the Vincci Marillia 4 *, an enclave in the middle of the paradisiacal Tunisian beaches from where one can enjoy the cultural environment of the region thanks to its good location, only 60 km from Tunis, 8 km from the old district of Hammamet and 500 meters from the main shops.

Guests have free use of the fitness room and indoor and outdoor swimming pools. The Spa & Wellness Centre provides a hammam and steam bath.

The hotel Vincci Marillia 4 * offers free Wi-Fi in public areas and free on-site parking.

Carthage Airport is 60 km away.

Hammamet is the epitome of the relaxation city where sea, sand, sky, sun, orange and palm trees meet, making of this resort an ideal holiday destination.

The city of Hammamet, with its remparts dating back to the XVth century and its medina consisting of winding lanes, has bewitched so many celebrities and world renowned writers, painters and artists.

Travel Informations

[Hammamet city](#) is located at 60km from Tunis international airport and 90km from Monastir airport. To arrive at the conference hotel, two possibilities are available :

Solution 1

From the airport you can get a taxi (approx. cost 25 euro). Special taxis allow joining the conference site (**Vincci Marillia 4 *** Hammamet hotel).

Information About Taxi transportation:

Tel: +216 98 30 93 48, +216 27 30 93 48

Email: info@taxitunisie.com

Website: http://www.taxitunisie.com/default_ang.htm

Solution 2

You can follow this path:

From the Tunis international airport take a taxi to the Tunis train station then take the train from Tunis to BIR BOU REKBA. Finally take a taxi from Hammamet to **hotel Vincci Marillia 4 *** (approx. cost 5 euro).

For the train schedules informations please visit the following website: <http://www.sncft.com.tn>

You can take a taxi from BIR BOU REKBA train station to **The hotel Vincci Marillia 4 *** if available.

Conference Registration

Thursday - May 10, 2018

(8.00 – 17.30)

Friday - May 11, 2018

(8.00 – 17.30)

Saturday - May 12, 2018

(8.00 – 10.00)

Program

Thursday - May 10, 2018	Registration (8.00 – 9.00)	
	Technical Sessions 1 (9.00 – 10.30)	
	IVP1	
	Coffee break (10.30 – 11.00)	
	Opening Ceremony (11.00 – 11.30)	
	Keynote 1 (11.30 – 12.30) <i>Speaker : Prof. Mahir Dursun - Turkey</i> <i>Title: An Optimized Design and Implementation of A Solar Powered Drip Irrigation Systems by using Genetic Algorithm and Artificial Neural Network</i>	
	Lunch break (12.30 – 14.30)	
	Technical Sessions 2 (14.30 – 16.00)	
	SMC1	
	Coffee break (16.00 – 16.30)	
	Technical Sessions 3 (16.30 – 18.00)	
	SP	EPS1
Friday - May 11, 2018	Registration (8.00 – 9.00)	
	Technical Sessions 4 (9.00 – 10.30)	
	IVP2	FDS
	Coffee break (10.30 – 11.00)	
	Keynote 2 (11.00 – 12.00) <i>Speaker : Prof. Kamel Besbes - Tunisia</i> <i>Title: Industry 4.0, the new industrial revolution</i>	
	Keynote 3 (12.00 – 13.00) <i>Speaker: Dr. Wael Dghais - Tunisia</i> <i>Title: Simultaneous Wireless Power Transfer and Data communication via Resonant Inductive Channel: Challenges and Solutions</i>	
	Lunch break (13.00 – 14.30)	
	Technical Sessions 5 (14.30– 16.00)	
	STN	
	Coffee break (16.00 – 16.30)	
	Technical Sessions 6 (16.30 – 18.00)	
	IS	EPS2
Saturday - May 12, 2018	Registration (8.00 – 9.00)	
	Technical Sessions 7 (9.00 – 10.30)	
	IVP3	SMC2
	Coffee break (10.30 – 11.00)	
	Closing Ceremony	

Sessions Scheduling

	Code	Title	Papers	Room
Technical Sessions 1	IVP1	Image & Video Processing (Part 1)	36, 68, 81, 59, 61, 107	Carthage
Technical Sessions 2	SMC1	System Modeling & Control (Part 1)	111, 46, 50, 104, 58, 62	Carthage
Technical Sessions 3	SP	Signal Processing	116, 54, 55, 67, 109, 75, 106	Carthage
	EPS1	Electrical System & Power (Part 1)	35, 47, 56, 100, 141	Kairouan
Technical Sessions 4	IVP2	Image & Video Processing (Part 2)	64, 115, 48, 97, 140, 102	Carthage
	FDS	Fault Diagnosis System	27, 118, 79, 78, 86, 98, 103	Kairouan
Technical Sessions 5	STN	Sensors, Telecommunication & Network	71, 60, 28, 66, 77, 99, 108	Carthage
Technical Sessions 6	IS	Intelligent Systems	23, 37, 51, 65, 105, 112	Carthage
	EPS2	Electrical System & Power (Part 2)	84, 88, 95, 96, 25	Kairouan
Technical Sessions 7	IVP3	Image & Video Processing (Part 3)	69, 72, 80, 49, 113	Carthage
	SMC2	System Modeling & Control (Part 2)	63, 70, 85, 87, 26, 57	Kairouan

Opening Ceremony	Carthage
Keynote 1, Keynote 2, Keynote3	Carthage
Closing Ceremony	Carthage

DAY 1

Thursday - May 10, 2018 / Technical Sessions 1 (9.00 – 10.30)

Session Code: IVP1 / **Session Title:** Image & Video Processing (Part 1)

Paper **Session Chair(s) :** Prof. Najoua Essokri Ben Amara et Prof. Hassen Seddik

- 36 Real time HEVC video compression using Hybrid DWT-DCT algorithm on an FPGA
Mouna Eltaief, Anis Ammar, Hana Ben Fraj and Chokri Souani
- 68 Analysis of descriptors relevant to image search by content
Amira Slimani and Lachiri Zied
- 81 Ontology-based Methodologies for Extracting Semantic Content from Videos
Jemai Bornia and Ali Frihida
- 59 Software implementation of a hybrid method for copyright protection and video authenticatio
Imed Derbali, Salah Dhahri, Roukaya Dalbouchi and Abdelkrim Zitouni
- 61 Violence Classification Algorithm Based on Substantial Derivative
Islem Mhiri, Anouar Ben Khalifa
- 107 Unsupervised cancerous cells detecting with android application based on the biomarker Ki-67
Hassen Seddik, Chiraz ben jabeur and Ines rezgui

Thursday - May 10, 2018 / Technical Sessions 2 (14.30 – 16.00)

Session Code: SMC1 / **Session Title:** System Modeling & Control (Part 1)

Paper **Session Chair(s) :** Prof. Hassani Messaoud & Prof. Souad Chebbi

- 111 Fault Tolerant Control of a Uncertain Flexible Joint Manipulators Based on Singular Perturbation
Aymen ElGHOUL, Adel BOUZIRI, Adel TELLILI and Mohamed Naceur ABDELKRIM
- 44 An LMI Approach for the Design of Unknown Input Observer for Nonlinear Systems in High Frequency Domain
Ali Chibani, Mohammed Chadli and Naceur Benhadj Braiek
- 50 An Efficient Control Approach Based on Linear Matrix Inequalities (LMIs)
Samir Abdelmalek, Ahmad Taher Azar and Chakib Ben Njima
- 104 The generation of the biped trajectory using the pendulum modeling method LPM and LIPM
Arbia Ayari and Jilani Knani
- 58 Cooperative Distributed Model Predictive Control for nonlinear system Multi-vehicle Formation
Nadia Hajji, Saber Maraoui, Kais Bouzrara
- 62 State and Unknown Input Estimation of Nonlinear Singular Systems
Fatma Hamzaoui, Malek Khadhraoui and Hassani Messaoud

Thursday - May 10, 2018 / Technical Sessions 3 (16.30 – 18.00)

Session Code: SP / Session Title: Signal Processing

Paper **Session Chair(s) : Prof. Anis Khouja & Prof. Aicha Bouzid**

- 116** FPA Based Design of Circular Microstrip Antenna for CubeSat Communications
Haykel Chaabane, Wael Jaballah and Nizar Rokbani
- 54** Parallel implementation on GPU for EEG artifact rejection by combining FastICA and TQWT
Abidi Afef, Nouira Ibtihel, Bedoui Mohamed Hédi
- 55** SVM classification of Helitrons based on features extracted from FCGS representation
Rabeb Touati, Imen messaoudi, Afef Elloumi and Zied Lachiri
- 67** Time-Frequency Representation of the DNA sequences: An investigation's platform for the *Cænorhabditis elegans* repeats
Imen Messaoudi, Afef Elloumi Oueslati and Zied Lachiri
- 109** Multi-Finger Transistor Effects on RF Analog Integrated Circuit Performances
Aymen Ben Hammadi, Mongia Mhiri, Fayrouz Haddad, Sehmi Saad and Kamel Besbe
- 75** Estimation of IMU Orientation Using Linear Kalman Filter based on Maximum Correntropy Criterion
Salma Habbachi, Mounir Sayadi, Nasseur Rezzoug and Philippe Gorce
- 106** A reconfigurable galinstant-based RF MEMS
Nizar Habbachi, Hatem Boussetta, Mohamed Adel Kallala, Ali Boukabache, Patrick Pons and Kamel Besbes

Session Code: EPS1 / Session Title: Electrical System & Power (Part 1)

Paper **Session Chair(s) : Prof. Mahir Dursun & Prof. Abdelkader Chaari**

- 35** Ultra-Wideband Elliptical-Dipole Optical Antenna for Solar Energy Harvesting
W. Amara, D. Oueslati, H. Rmili, A. Alghamdi and T. Aguilu
- 47** Comparison between three Commands Photovoltaic MPPT of the system: algorithm P&O, IncCond and FLC, using converter BOOST to Power Stepper Motor drive
Nezha EL HICHAMI, Ahmed ABBOU, Saloua MARHRAOUI, Salaheddine RHAILI and Abdellah ZIOUH
- 56** Power Management of Seven Levels Cascaded Multilevel Inverter with Hybrid Sources
Said Khoudiri, Fateh Benchabane and Khaled Yahia
- 100** Importance of the Wiring Circuit of Power Converters on their Transient Behavior
Atef Jedidi, Hatem Garrab and Hervé Morel
- 141** Fresnel Lens Focused Solar Cell Performance Comparison for SHE (Solar-Hydroelectric) Systems
Mahir Dursun and Fatih Saltuk

DAY 2

Friday - May 11, 2018 / Technical Sessions 4 (9.00 – 10.30)

Session Code: IVP2 / Session Title: Image & Video Processing (Part 2)

Paper **Session Chair(s) : Prof. Ali Douik & Prof. Zied Lachiri**

- | | |
|------------|--|
| 64 | Boosting CNN Learning by Ensemble Image Preprocessing Methods for Cervical Cancer MR Image Segmentation
<i>Nesrine Bnoui, Hadil Ben Amor, Islem Rekik, Mohamed Salah Rhim, Basel Solaiman and Najoua Essoukri Ben Amara</i> |
| 115 | 3D CNN for Human Action Recognition
<i>Sameh Neili Boualia and Najoua Essoukri Ben Amara</i> |
| 48 | Real time object tracking and algorithmic optimization
<i>Anis Ammar, Hana Ben Fredj, Mouna Letaief and Chokri Souani</i> |
| 97 | Facial Recognition in Degraded Conditions Using Local Interest Points
<i>Laila Ouannes Nasr, Anouar Ben Khalifa and Najoua Essoukri Ben Amara</i> |
| 140 | Scene classification using new variant of LTP
<i>Leila Kabbai, Mehrez Abdellaoui and Ali Douik</i> |
| 102 | High speed edge detection algorithm on a GPU
<i>Afef Bettaieb, Nabila Filali, Taoufik Filali and Habib Ben Aissia</i> |

Session Code: FDS / Session Title: Fault Diagnosis System

Paper **Session Chair(s) : Prof. Tarek Garna & Prof. Hedi Dhouibi**

- | | |
|------------|---|
| 27 | A bond graph observer-based approach for actuator faults diagnosis
<i>Hajer Najari, Rafika El Harrabi and Mohamed Naceur Abdelkrim</i> |
| 118 | Multilevel decomposition of the envelope for faults detection in gears
<i>Amina Benzineb, Hanen Gabzili and Zied Lachiri</i> |
| 79 | Spectral Response and Efficiency of a Gearbox - SEIG system involved in Wind Turbine Application
<i>Walid Touti, Mohamed Salah, Samira Ben Salem, Khmais Bacha and Abdelkader Chaari</i> |
| 78 | Assesment of Different Techniques for Bearing Faults Detection in PMSMs
<i>Akram BENHADJ AMMAR, Yasser GRITLI and Mohamed BENREJEB</i> |
| 86 | Control and Diagnosis of Uncertain Nonlinear System by the Sliding Mode Approach
<i>Adel Bouziri, Aymen Elghoul, Adel Tellili and Mohamed Naceur Abdelkrim</i> |
| 98 | Fault Diagnosis for dynamic nonlinear system based on Variable Moving Window KPCA
<i>Radhia Fezai, Majdi Mansouri, Okba Taouali, Mohamed Faouzi Harkat and Nasreddine Bouguila</i> |
| 103 | Fault detection for nonlinear system using dynamic KPCA methods
<i>Radhia Fezai, Majdi Mansouri, Okba Taouali, Mohamed Faouzi Harkat and Nasreddine Bouguila</i> |

Friday - May 11, 2018 / Technical Sessions 5 (14.30 – 16.00)

Session Code: STN / Session Title: Sensors, Telecommunication & Network

Paper Session Chair(s) : Prof. Kamel Besbes & Prof. Chokri Souani

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|------------|--|
| 71 | For a secure mobile ecosystem The dilemma of MDM or MAM
<i>Salima Hacini and Radhia Khellaf</i> |
| 60 | An improved energy-efficient routing protocol based on Minimum Spanning Tree for Wireless Sensor Network
<i>Sana Messous, Nouredine Liouane, Alain Pegatoquet, Michel Auguin</i> |
| 28 | NCDCLA: QoS aware Network Coding based Duty Cycle Learning Algorithm for Real time and Reliable Wireless Sensors Networks
<i>Sghaier Amra and Aref Meddeb</i> |
| 66 | Comparing the performances of Polynomial PoolBased, PIKE, and Group-based Key Pre-distribution Protocols in WSNs
<i>Malek Ben Amira, Mayssa Bouraoui and Nouredine Boulajfen</i> |
| 77 | Analysis and design of a Direct-Conversion receiver Front-end for LTE wireless network
<i>SOUMAYA AZZOUNI, Nizar Khitouni and MED SALIM BOUHLEL</i> |
| 99 | Frequency and Negative Differential Resistance Performances of AlGaIn/InGaIn/AlGaIn Resonant Tunneling Diodes for Terahertz Oscillators
<i>Ameni Rached, Amel Bhourri and Jeans Louis Lazzari</i> |
| 108 | Investigation of sensing properties of WO ₃ -treated porous silicon
<i>H. Mhamdi, R. Benabderrahmane Zaghouni, M. Alaya and W. Dimassi</i> |

Friday - May 11, 2018 / Technical Sessions 6 (16.30 – 18.00)

Session Code: IS / Session Title: Intelligent Systems

Paper Session Chair(s) : Prof. Kais Bouzrara & Dr. Nizar Rokbani

- | | |
|------------|--|
| 23 | Supervising and Predicting Road Traffic in a smart city via multi-agent architecture
<i>Mohamed Rami GARALI, Olfa BELKAHLA DRISS and Mohamed Karim SBAI</i> |
| 37 | Genetic Algorithm for the Share-A-Ride Problem
<i>Wafa Bouhouch and Olfa Belkahla Driss</i> |
| 51 | Non-invasive glucose monitoring: Application and technologies
<i>Ghozzi Dorsaf, Manai Yacine and Nouri Khaled</i> |
| 65 | 3D Modeling Using the CityGML Format
<i>Ben Yahya Ines and Ali Frihida</i> |
| 105 | Artificial Immune based Bot for planetWar game
<i>Mohamed Amine Chikh Touami, SALEM Mohammed and KHELFI Mohammed Faycal</i> |
| 112 | Identification and control using LSDP approach applied to the blower PT326
<i>Marwa Yousfi, Chakib Ben Njima and Tarek Garna</i> |

Session Code: EPS2/ Session Title: Electrical System & Power (Part 2)**Paper** **Session Chair(s) : Prof. Mario Farrugia & Prof. Anis Khouaja**

- 84 Using perturb and observe technique to charge a storage battery connected in a small wind turbine
Faycel Jamaaoui and Mounir Ayadi
- 88 Design and analysis of Planar and Integrated Magnetics components for Power converter Applications
Hamed Belloumi, Aymen Ammouri and Ferid Kourda
- 95 An Inductor-less Broadband LC-Oscillator for RF Applications
Sehmi Saad, Mongia Mhiri, Aymen Ben Hammadi and Kamel Besbes
- 96 Two and Three-Level Virtual-Flux Direct Power Control of Grid-Connected Inverters
Zouhaira Ben Mahmoud, Mahmoud Hamouda and Adel Khedher
- 25 Gaussian Process Based Method for Point and Probabilistic Short-Term Wind Power Forecast
Ali Lahouar

DAY 3**Saturday - May 12, 2018 / Technical Sessions 7 (9.00 – 10.30)****Session Code: IVP3 / Session Title: Image & Video Processing (Part 3)****Paper** **Session Chair(s) : Prof. Afef Elloumi & Prof. Zied Laachiri**

- 69 Fractal analysis of bacteria and C.elegans genome based on FCGR Images
Zeineb Chebbi Babchia and Afef Elloumi Oueslati
- 72 Comparing MLP and CNN for Math Symbol and Formula Script and Type Identification
Kaouther Khazri and Afef Kacem
- 80 Object classification using Radon transform and Convolutional Neural Networks
Dhekra El Hamdi, Ines Elouedi, Mai K Nguyen, Atef Hamouda and Abir Fathalla
- 49 Efficient 3D Face Identification System Under Large Pose Variation
Souhir Sghaier, Sabrine Hamdi, Amel Landolsi and Chokri Souani
- 113 Lung Tumor Segmentation using Normalized Cuts in CT Scan Images
Nciri Walid and Benzarti Faouzi

Session Code: SMC2 / Session Title: System Modeling & Control (Part 2)**Paper** **Session Chair(s) : Prof. Hassan Mekki & Prof. Souad Chebbi**

- 63 Distributed Sliding Mode Control for complex systems Application to a four tank system
Nadia Hajji, Saber Maraoui, Maroua Said and Kais Bouzrara
- 70 NSGA-II Multi-objective Optimization Based Tuning of an Integral Sliding Mode Controller for a Quadrotor UAV

	<i>Nour Ben Ammar, Soufiene Bouallège and Joseph Haggège</i>
85	Design of Full Order Observers for Nonlinear Singular Systems <i>Fatma Hamzaoui , Malek Khadhraoui and Hassani Messaoud</i>
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